ABSTRACT

[0072] An object of the present invention is to provide an ultimate analyzer which can display an element distribution image of an object to be analyzed with high contrast to determine the positions of the element distribution with high accuracy, and a scanning transmission electron microscope and a method of analyzing elements using the ultimate analyzer. The present invention exists in an ultimate analyzer comprising a scattered electron beam detector for detecting an electron beam scattered by an object to be analyzed; an electron spectrometer for energy dispersing an electron beam transmitted through the object to be analyzed; an electron beam detector for detecting said dispersed electron beam; and a control unit for analyzing elements of the object to be analyzed based on an output signal of the electron beam detected by the electron beam detector and an output signal of the electron beam detected by the scattered electron beam detector. Further, the present invention exists in a scanning transmission electron microscope comprising the above ultimate analyzer; an electron beam source; an electron beam scanning coil; a scattered electron beam detector; objective lenses; a focusing lens; a magnifying magnetic field lens; and a focus adjusting electromagnetic lens. Furthermore, the ultimate analyzer or the scanning transmission electron microscope may comprises a control unit which makes it possible that both of an image of element distribution and an STEM image detected and formed by the scatted electron beam detector are observed at a time in real time, and the image of element distribution is corrected by the STEM image detected and formed by the scattered electron beam detector.